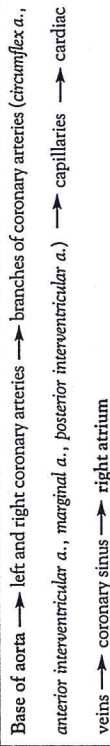


Description

Coronary circulation refers to the blood supply to the heart. The coronary arteries supply oxygenated blood to the heart and the cardiac veins carry deoxygenated blood back to the heart. The following flowchart summarizes coronary circulation through the blood vessels.



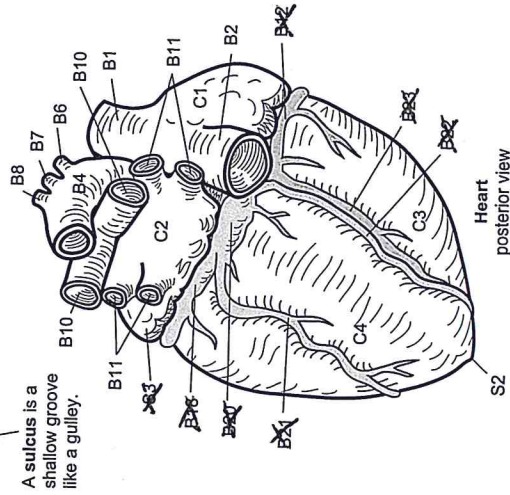
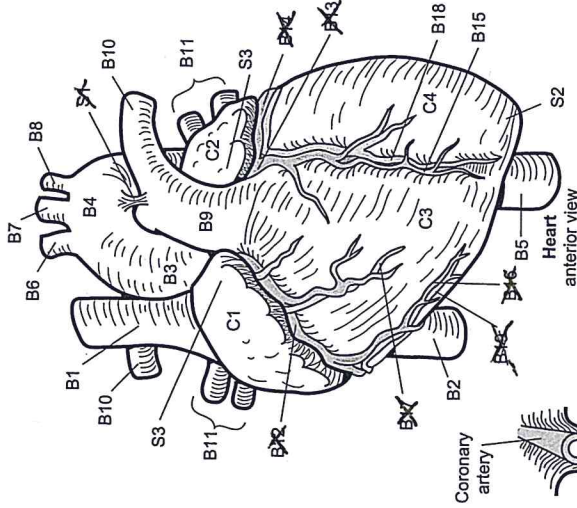
When coronary arteries become blocked, the blood supply to the heart is reduced. This deprives cardiac muscle cells of oxygen. If this blockage persists over many years, it may lead to a myocardial infarction (*heart attack*).

Analogy

A sulcus is like a shallow groove or gully.

Study Tip

To distinguish the anterior from the posterior view of the heart, use the coronary sinus as a landmark for the posterior view. It is often difficult to see on a dissected specimen because it is normally covered with a horizontal band of fatty tissue. Good landmarks for the anterior view include the pulmonary trunk, anterior interventricular artery, circumflex artery, and ascending aorta.



Blood Vessels (B)

- B1. _____
- B2. _____
- B3. _____
- B4. _____
- B5. _____
- B6. _____
- B7. _____
- B8. _____
- B9. _____
- B10. _____
- B11. _____
- B12. R. coronary a.
- B13. L. coronary a.
- B14. Circumflex a.
- B15. _____
- B16. marginal a.
- B17. Anterior Cardiac v.
- B18. _____
- B19. Small cardiac v.
- B20. Coronary sinus
- B21. Posterior of L. ventricle
- B22. middle cardiac v.
- B23. posterior interventricular a.

Chambers (C)

- C1. _____
- C2. _____
- C3. _____
- C4. _____

Structures (S)

- S1. Ligamentum arteriosum
- S2. _____
- S3. Auricle

Key to Illustration

- | | |
|---|---|
| Blood vessels (B) | Structures (S) |
| B1. Superior vena cava | <input checked="" type="checkbox"/> Ligamentum arteriosum |
| B2. Inferior vena cava | <input checked="" type="checkbox"/> S2. Apex (tip) of heart |
| B3. Ascending aorta | <input checked="" type="checkbox"/> Auricle |
| B4. Aortic arch | Chambers (C) |
| B5. Descending aorta | C1. R. atrium |
| B6. Brachiocephalic trunk | C2. L. atrium |
| B7. L. Common carotid a. | C3. R. ventricle |
| B8. L. Subclavian a. | C4. L. ventricle |
| B9. Pulmonary trunk | |
| B10. Pulmonary arteries | |
| B11. Pulmonary veins | |
| <input checked="" type="checkbox"/> R. Coronary a. (in r. anterior atrioventricular groove) | |
| <input checked="" type="checkbox"/> L. Coronary a. | |

Description

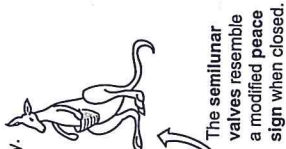
The heart is divided into left and right halves and has four chambers, two atria and two ventricle. The atria are the first chambers to receive blood from the body. They fill with blood, contract, and transfer blood to the pumping chambers or ventricles. The right ventricle pumps deoxygenated blood to the lungs and the left ventricle pumps oxygenated blood to the rest of the body. The heart has two different types of valves: atrioventricular (A-V) valves and semilunar valves. The A-V valves are located between the atria and the ventricles. The one on the right side of the heart has three valve flaps, so it is called the tricuspid valve, and the one on the left side has two valve flaps so it is called the bicuspid (mitral) valve. These valves permit a one-way flow of blood from atria to ventricles.

Long, fibrous, cord-like structures called chordae tendineae anchor the valve flaps to the papillary muscles, which are long, cone-shaped muscular extensions of the inner ventricles. The chordae tendineae and papillary muscles help to keep the A-V valves closed during ventricular contraction. The semilunar valves are located at the base of each major artery that leaves each ventricle.

On the right side is the pulmonary semilunar valve and on the left is the aortic semilunar valve. These valves prevent backflow of blood into the ventricles. From outermost to innermost, the wall of the heart is made of three layers: epicardium, myocardium, and endocardium. The epicardium (visceral pericardium) is made of fibrous connective tissue and is the innermost layer of the pericardial sac that surrounds the heart. The myocardium is composed of multiple layers of cardiac muscle and many blood vessels and nerves. The endocardium lines the inside of all the chambers along with all the valves and is made of simple squamous epithelium.

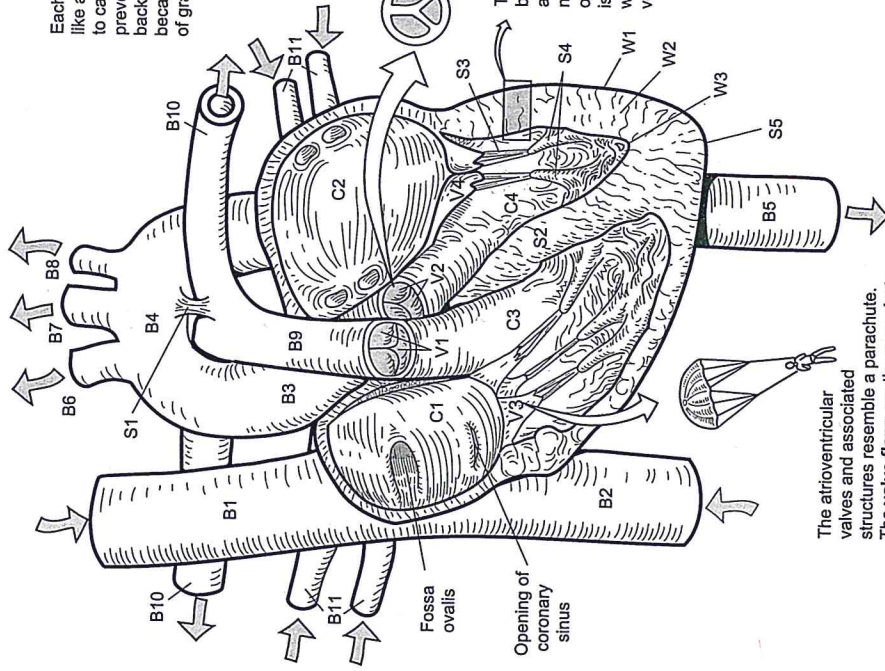


Each valve flap opens like a kangaroo pouch to catch blood and prevent it from falling back into the ventricle because of gravity.



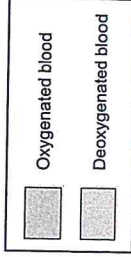
The semilunar valves resemble a modified peace sign when closed.

To distinguish between the left and right ventricles, note that the wall of the left ventricle is thicker than the wall of the right ventricle.



The atrioventricular valves and associated structures resemble a parachute. The valve flaps are the parachute, the parachute cords are the chordae tendineae, and the paratrooper is the papillary muscle.

KEY for COLORED ARROWS



Key to Illustration

Blood Vessels (B)	Chambers (C)	Valves (V)
B1. Superior vena cava	C1. R. atrium	V1. Pulmonary semilunar
B2. Inferior vena cava	C2. L. atrium	V2. Aortic semilunar
B3. Ascending aorta	C3. R. ventricle	V3. Tricuspid leaflet (valve)
B4. Aortic arch	C4. L. ventricle	V4. Bicuspid leaflet (valve)
B5. Descending aorta	Structures (S)	Wall Layers (W)
B6. Brachiocephalic trunk	S1. Ligamentum arteriosum	W1. Epicardium
B7. L. Common carotid a.	S2. Interventricular septum	W2. Myocardium
B8. L. Subclavian a.	S3. Chordae tendineae	W3. Endocardium
B9. Pulmonary trunk	S4. Papillary muscle	
B10. Pulmonary arteries	S5. Apex (tip)	
B11. Pulmonary veins		